

## PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 85/TY00L58/WO	<b>FOR FURTHER ACTION</b>		See Form PCT/PEA/416
International application No. PCT/IB2004/000192	International filing date (day/month/year) 28.01.2004 ✓	Priority date (day/month/year) 28.01.2003 ✓	
International Patent Classification (IPC) or national classification and IPC G01S13/03, B60R21/01			
Applicant TOYOTA JIDOSHA KABUSHIKI KAISHA ET AL. ✓			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> sent to the applicant and to the International Bureau a total of sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 23.08.2004 ✓		Date of completion of this report 11.01.2005	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer  Johansson, R  Telephone No. +49 89 2399-7594	



**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/IB2004/000192

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**Box No. I Basis of the report**

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1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:

- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4)
- ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1-18 as originally filed

**Claims, Numbers**

1-30 as originally filed

**Drawings, Sheets**

1/4-4/4 as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT  
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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1,11,21
Inventive step (IS)	Yes: Claims	
	No: Claims	1-30
Industrial applicability (IA)	Yes: Claims	1-30
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/IB2004/000192

1. Reference is made to the following documents:

D1=WO 98/32030  
D2=DE 199 63 006  
D3=US 4 926 171  
D4=US 6 087 928  
D5=US 3 864 678  
D6=US 5 314 037  
D7=US 5 633 642

2. Although claims 1 and 11 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought. The aforementioned claims therefore lack conciseness. Moreover, lack of clarity of the claims as a whole arises, since the plurality of independent claims makes it difficult, if not impossible, to determine the matter for which protection is sought, and places an undue burden on others seeking to establish the extent of the protection.

Hence, claims 1 and 11 do not meet the requirements of Article 6 PCT.

In the present case only one independent method claim and one apparatus claim, with features corresponding to those of the method claim, would appear appropriate.

3. D1 discloses (cf. page 6, lines 4 and 17-18, page 13, lines 22-26, page 14, lines 3-11, page 17, line 23-page 18, line 8, page 20, line 1-20 and claims 1 and 22) a collision predicting apparatus for predicting whether an own vehicle and a collision target will collide, comprising:

-subject target detection means (radar) for detecting a plurality of targets that exist in a course of the own vehicle and that have a possibility of colliding with the own vehicle;

- relative quantity detection means for detecting a relative quantity between the own vehicle and each of the subject targets detected by the subject target detection means;

-collision time calculation means for predicting and calculating a collision time of each of the subject targets preceding a collision with the own vehicle, by using the relative quantity between the own vehicle and each of the subject targets detected by the relative quantity detection means;

-collision subject target selection means for selecting a collision subject target having a high possibility of colliding with the own vehicle based on at least the collision time of each of the subject targets calculated by the collision time calculation means; and

-collision prediction means for predicting a collision between the collision subject target selected by the collision subject target selection means and the own vehicle, using the collision time of the collision subject target.

Thus the subject matter of claim 1 is not novel (Article 33(2) PCT).

- 3.1 It is also seen that each of the documents D2-D6 discloses the subject matter of claim 1
- 4 The above objection applies mutatis mutandis to the subject matter of claims 11 and 21.
5. The feature of the dependent claims 2, 12 and 22 is self-evident and inherent in D1-D5 (to base crash prediction upon an estimated collision time other than the shortest would be disastrous).

The features of dependent claims 3-4,10 (and the corresponding claims 13-14,20 and 23-24,30) are also self-evident and inherent in D2-D6.

- 5.1 Dependent claims 5-6 (and the corresponding claims 15-16 and 25-26) refer to object tracking. Tracking is inherent in D2-D6, but there is no explicit mentioning of an extrapolation flag. However, D7, which relates to a similar system (determining the most dangerous target object), discloses in column 6, line 43 - column 7, line 20) the use of a predetermined time period, within which, in the absence of measurement data, estimated values are formed. This corresponds to setting an extrapolation flag. The person skilled in the art would without involving an inventive step modify the D2-D6 in accordance with the teaching given in D7, thus

arriving at the subject matter of dependent claims 5 and 6.

- 5.2 Dependent claims 7-9 (and the corresponding claims 18-19 and 28-29) are misleading in referring to correcting the collision time by setting the collision time at a predetermined maximum value. As set out in the description on page 12, lines 26-30:

"Thus, the ECU 10 determines whether, among the subject targets that actually exist forward of the own vehicle, there is any subject target that exists within a region of the predetermined distance  $dW$ , that is, a region of a distance that is needed for the own vehicle to run without colliding with the subject target. In this manner, the ECU 10 selects a subject target that has a great possibility of colliding with the own vehicle as the own vehicle runs".

As is clear from the above passage, the collision time is not corrected. Rather the collision time is set to a predetermined maximum value for those targets that are outside half of the own lane, such that these targets can be disregarded.

- 5.3 Moreover, the features of dependent claims 7-9 (and the corresponding claims 18-19 and 28-29) are known from D7 (cf column 7, lines 32-34 and claims 9 and 11 and). The person skilled in the art would without involving an inventive step modify the D2-D6 in accordance with the teaching given in D7, thus arriving at the subject matter of dependent claims 7-9.